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DEVELOPMENT AND TRANSFER OF TECHNOLOGIES

Progress report

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I. INTRODUCTION

A. Mandate

1. The Conference of the Parties (COP), the Subsidiary Body for Scientific and Technological Advice (SBSTA) and the Subsidiary Body for Implementation (SBI) have requested the secretariat to undertake a number of tasks regarding technology and technology transfer. These include, for example, the preparation of reports on adaptation technology, the development of a plan for technology information centres and networks, and an expansion of the survey of technology and technology information needs. A detailed summary of requests, as of the fourth session of the SBSTA, may be found in document FCCC/SB/1997/1. Further information may be found in documents FCCC/SBSTA/1997/4, FCCC/SBSTA/1997/6, FCCC/SB/1997/3 and FCCC/SB/1997/4.

B. Scope of the note

2. This note provides a progress report on the three specific tasks mentioned above. Background information is provided in technical papers on adaptation technologies (FCCC/TP/1997/3) and on options for technology information centres and networks (FCCC/TP/1997/4).

C. Possible action by the SBSTA

3. The SBSTA may wish to:

(a) Recall its request to the secretariat to expand the technology needs survey to all non-Annex I Parties and urge these Parties to co-operate with the secretariat in the conduct of the survey; and

(b) Urge Annex I Parties to co-operate with the secretariat by providing information about any surveys of the technology and technology information needs of non-Annex I Parties they have undertaken, including the methods utilized.

4. The SBSTA may also wish to urge Parties to provide the secretariat with information on planning and decision tools, including software relevant for adaptation to climate change, on topics such as health, water, coastal zone, natural ecosystems, agriculture and urban areas, and to encourage their research and development institutions to co-operate with the secretariat in the formulation of focused papers on adaptation technologies.

5. In addition, the SBSTA may wish to:

(a) Urge Parties to provide comments to the secretariat on plans for international centres and networks for enhancing the transfer of technology and technology information; or

(b) Decide to encourage the implementation of one or more of the options listed in section IV of this note, and to urge a Party or Parties, or an international organization to prepare a detailed implementation plan, including a budget, for consideration at the next session.

II. TECHNOLOGY INFORMATION NEEDS SURVEY

6. The secretariat reported the results of an initial survey on technology and technology information needs at the fifth session of the SBSTA (FCCC/SB/1997/1). Taking into consideration the guidance provided by the SBSTA at its fifth session, the secretariat will expand the initial survey of technology and technology information needs of non-Annex I Parties to the Convention. This will be done with the co-operation of the University of Amsterdam (IVAM Environmental Research).[1] A report will be available for the eighth session of the SBSTA in June 1998.

7. The secretariat has been informed that several Annex I Parties can, or may, in the near future, undertake projects which will build on the results of the initial survey. The aim of these projects is to co-operate and assist a small number of developing countries to undertake more detailed analyses of their specific technology and technology information needs. These projects may provide experience and lessons which could improve understanding of the technology transfer process and be beneficial to other Parties. For example, some aspects may lead to improvements in future surveys of needs while others may lead to new approaches to the transfer of technology.[2]

III. ADAPTATION TECHNOLOGY

A. Background

8. In response to the requests of the COP and the SBSTA, the secretariat engaged the Free University in the Netherlands to undertake the preparation of a technical paper on adaptation technologies (FCCC/TP/1997/3). An initial draft of the paper was sent to experts for review and comments. The experts were nominated by governments and selected from the roster. In addition, the initial draft was sent to participants in the Intergovernmental Panel on Climate Change (IPCC) workshop on adaptation held in the Netherlands between 21-22 March, 1997. Comments provided by experts have been incorporated by the authors, as appropriate, into document FCCC/TP/1997/3.

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[1] This activity is supported by the government of the Netherlands.

[2] As experience is gained from these projects, the secretariat will co-operate with the relevant Parties to assess modalities for making results available to other Parties.

9. The secretariat notes that the IPCC will host a workshop in 1998 on adaptation, which will go beyond technological matters, into all aspects of this subject (FCCC/SBSTA/1996/20).

B. Discussion

10. Considering adaptation technologies within a broader discussion of adaptation issues is a relatively new challenge for governments and the private sector. Adaptation technology is, by itself, a complicated and large endeavour with many different aspects. However, many institutions are already engaged in making autonomous adjustments, without explicitly recognizing the link to climate change, or the need to consider climate change as a criteria for decision. Given the scope and limited understanding of the issue, this technical paper should be viewed as an initial contribution, which may serve as a basis for a broad discussion.

Content of the technical paper

11. The technical paper provides an overview of adaptation issues and identifies the role that technologies could play as part of a broad approach. Other aspects of adaptation may include economic, legal and institutional measures. The paper attempts to define concepts and to address questions such as:

- What is adaptation?
- What should systems adapt to?
- How can technologies contribute to adaptation?
- What general technological opportunities exist in selected sectors?
- What arguments can be made in favour of undertaking some adaptation measures now?
- What criteria could be used for research and development and other investment decisions?
- What types of decision tools are available to assist in making decisions ?

12. The technical paper also identifies two types of decisions related to technologies. The first relates to decisions about infrastructure and planning by national, regional and local governments. The second concerns decisions about research and development priorities by corporations and government laboratories.

Conclusions of the technical paper

13. **Technologies could be used now and could play an increasingly important part in adaptation to climate change.** Many opportunities exist for the application of both hard and soft technologies to complement economic, legal and institutional adaptation options. In spite of the many uncertainties that still surround climate change, technology can already be employed in a cost-effective manner to enhance the robustness and flexibility of human systems, and the adaptability of natural systems.

14. **Many technologies that could be used to adapt to climate change have been used successfully as a means of adapting to contemporary climate variability and extremes.** Examples of existing adaptation technologies include air conditioning, flood-defence systems, irrigation, monitoring, forecasting and early warning systems for natural hazards. However, it may well be that climate change will exact new and higher standards of reliability and performance of adaptation technologies, at significantly lower costs.

15. **Innovation and new technologies are required in order to improve access by all countries at reduced costs.** This provides new challenges and opportunities to research laboratories, industry and other groups involved in research and development. Many such groups may not yet be aware of these opportunities, simply because they have never considered their activities as being relevant in the context of climate change.

16. **Adaptation to climate change can be autonomous. It can take place without the intervention of a decision maker and should be planned following informed and strategic actions.** Adaptation can also be reactive. It may be undertaken in response to an observed change. It can be anticipatory, that is, in advance of climate change. Planned adaptation can be both reactive and anticipatory, while autonomous adaptation is only reactive. In view of the suggested discernible human influence on global climate and in accordance with Article 3.3 of the United Nations Framework Convention on Climate Change (UNFCCC), anticipatory planned adaptation deserves particular attention from the international climate change community.

17. **Anticipatory planned adaptation is particularly important to reduce vulnerability to climate change.** Anticipatory planned adaptation can have a number of objectives. It may aim, for example, to increase the robustness of infrastructure designs and long-term investments; increase the flexibility of vulnerable managed systems; enhance the adaptability of vulnerable natural systems; and reverse the trends that increase vulnerability ("maladaptation").

18. **Anticipatory planned adaptation can be beneficial to a number of important sectors and systems.** Examples of sectors that could benefit from anticipatory planned adaptation are infrastructure, such as, port and harbour facilities, flood-defence systems, water supply systems, sewage systems and urban systems. Fragmented industries, such as those that are not part of a larger network of governmental and industrial organizations and human health programmes may also benefit.

19. **The arguments in favour of implementing some adaptation measures now are as follows:**

(a) The impacts of changing weather extremes may become apparent well before the impacts associated with changing trends;

(b) Large projects, currently being planned and implemented, could factor climate change into their designs and be cost effective. Many of these projects will be in place for 50 to 100 years; and

(c) Vulnerability to climate change in the long-term is a function of a society's experience in coping with current problems by means of economic, technical, institutional and socio-cultural measures. These capabilities can only be improved upon with experience.

20. **Many technologies that can be used to adapt to climate change also have other, non-climate, benefits.** These non-climate benefits are termed secondary benefits. Sometimes the secondary benefits of adaptation measures are sufficient to justify them in their own right. Such adaptation measures can be considered "no-regret" measures. Examples of these include technologies for increasing efficiency of water use, improved land-use planning, ecosystem and biodiversity protection, and monitoring, forecasting and early-warning systems.

21. **Some decision tools to evaluate alternative adaptation strategies, based on a number of criteria, are available. Others are undergoing further research**. The decision tools that are most relevant for climate change adaptation are cost-effectiveness analysis, multi-criteria analysis, risk-benefit analysis and cost-benefit analysis. A few of these decision tools have been incorporated into decision-support systems, which provide an important technology to assist planners and decision makers.

22. **Further activities to promote the development and application of innovative technologies could include:**

(a) Building awareness among planners and decision makers of the need to adapt to climate change, the part that technology can play in adaptation and the benefits of adaptation;

(b) Assessing the current and future availability, accessibility, potential, costs, environmental impacts and implementation requirements of technologies for climate change adaptation, as well as opportunities for innovation;

(c) Co-operating with research laboratories and industry to encourage research and development of adaptation technology;

(d) Creating a demand for climate change adaptation technology, for example, by setting standards that incorporate climate change projections, or via the market by requirements of the insurance industry;

(e) Establishing design and performance goals for adaptation technology; and

(f) Ensuring institutional coherence with related issues, such as those of national programmes for national disaster reduction or relief.

C. Issues for consideration

23. The SBSTA may wish to consider how it can promote the development of decision tools related to adaptation technologies, particularly those involving infrastructure and research and

development. These are complicated processes involving individuals, the private sector and governments.

24. The compilation of tools to assist in decision-making will be partially addressed in the context of the work programme on methodologies, specifically in the task to compile and synthesize information on tools related to adaptation (FCCC/SB/1997/INF.2). This compilation will mainly aim at identifying tools to assist in the preparation of national plans. Some aspects may also be helpful to decision-making at the regional level.

25. The latter type of decision could be the focus of future technical papers on specific sectors as identified in document FCCC/SB/1997/3. Substantial participation by research and development institutions would be needed in order to broaden the understanding of how climate change could affect their future activities. Such efforts could provide insights into what may be needed in the long-term.

26. The SBSTA may wish to consider whether the two activities, identified in paragraph 23, are sufficient and/or whether other practical steps should be considered to build understanding and affect decision-making.

IV. CENTRES AND NETWORKS

A. Background

27. In response to the COP and the SBSTA, the secretariat will make available a technical paper on technology information centres and networks (FCCC/TP/1997/4). It will describe current activities of national centres and international organizations, identify possible functions and users of information, and provide ideas about how to enhance the transfer of information, including options for international centres and networks. It will not contain detailed information on the costs of specific options.

28. The secretariat based this note on information obtained during a meeting of experts (see FCCC/SB/1997/4) and a literature search. The Climate Technology Initiative (CTI) also provided the secretariat with preliminary data from a survey of existing centres.[3] The survey focused on 19 countries[4] and was conducted via mail, fax and other electronic means. A report from the CTI may be available for the seventh session of the SBSTA, but was not available to the secretariat as of 7 September, 1997. The data provided in this note should, therefore, be viewed as preliminary.

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[3] This activity was supported by the government of the United States of America.

[4] The 19 countries included 16 non-annex II Parties and 3 Parties with economies in transition.

B. Types of centres

29. Currently, there are international, national, regional, and local centres that gather and provide information about technologies and know-how pertaining to environment, energy, agriculture and other sectors. They are often hosted by, or form part of, larger organizations that are supported by the private sector and/or governments. Their functions and users differ considerably. For the purposes of this paper, the following definitions are suggested for "climate change" centres:[5]

(a) International Technology Information Centre(s): An international entity whose primary function is to collect, catalogue, and synthesize information on environmentally sound technology and know-how to mitigate or adapt to climate change climate relevant technologies and know-how from sources, and to disseminate information to national technology information centres and other users;

(b) National Technology Information Centre(s): A national entity or a unit within another organization, for example, a national technology centre, whose primary function is to collect, analyse and disseminate information on environmentally sound technology and know-how to mitigate or adapt to climate change to users within a country;

(c) National Technology Centre: A governmental, non-governmental or private sector entity whose functions may include, the conduct of research, the development of technologies, economic and financial analysis, analysis of policies related to technologies, demonstrations, training, feasibility studies, the collection and dissemination of information, outreach and networking; and

(d) Network: A means of passing information, either electronic or human.

C. Current activities[6]

30. There is currently no single international climate change technology information centre capable of addressing all sectors and providing a full range of services to all users. A number of international centres operate in climate change relevant sectors, performing different functions and supplying some services. At the national level, numerous entities conduct activities in climate relevant sectors with different levels of service.

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[5] Preliminary definitions are provided in FCCC/SB/1997/4.

[6] This document focuses primarily on items (a) and (b) above.

Activities supported by international organizations and Annex II Parties

31. Several international organizations, for example, the United Nations Environment Programme (UNEP), the Food and Agricultural Organization of the United Nations (FAO), the United Nations Development Programme (UNDP)[7] and the International Energy Agency (IEA) support information centres and systems (see Table 1 below). Annex II Parties provide support through organizations such as, the Japan Information Centre for Science and Technology (JICST), the German Aid Agency (GTZ), and the US National Renewable Energy Laboratory (NREL) (see Table 2 below). These organizations are involved in a number of activities including the development of web accessible information systems on cleaner technologies in different fields of application. In general, the systems are operated by a small sub-unit of 5-10 staff, or as a programme within an organization, specifically established with an information dissemination mandate.

32. These technology information systems may be divided into those that provide more general information, such as FAO and JICST, having been involved in information dissemination for the longest time and those that provide information that is more directly relevant to the climate change issue. For example, FAO began operation in 1957 and AGRIS and CARIS were established in 1975. The development and operation of more specific climate relevant information systems came about more recently. For example, GREENTIE was introduced at the Earth Summit in 1992.

Directories and intelligent search engines

33. One important task being undertaken by a number of the above organizations is the development of systems to quickly access the rapidly expanding information available on the Internet. This requires a means of systematically collecting and organizing information on climate relevant technologies. This means is usually called a search engine. Improved search engines and directories could significantly reduce the time required to access useful information in the future.

34. Recently, the International Environmental Technology Centre (IETC) at UNEP launched one such system at the fifth session of the Commission for Sustainable Development (CSD), held in New York from 7 to 25 April 1997. The newly developed Searchable Information Directory on Environmentally Sound Technologies (ESTs) called "maESTro", through its Directory Interchange Format (DIF), is fully compatible with UNEP's Global Resources Information Database (GRID), the database of the National Aeronautics and Space Administration (NASA), the Committee on Earth Observation Satellites (CEOS), the National Space Development Agency of Japan (NASDA) and others. The searchable EST directory includes the IETC's survey on EST information systems, a compilation of about 130 institutions throughout the world that are involved with ESTs and an overview of "eco-friendly" technologies in IETC's field of activity.

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[7] Provides technical and financial support to build and maintain networks and national centres.

Table 1 Examples of centres and systems supported by international organizations

Abbreviation	Network	Launched	Institution	Location	Area of Application
ICPIC	International Cleaner Production Information Clearing-house	1990	UNEP - Cleaner Production Programme	France, Paris	Industry and government
OAIC	Ozone Action Information Clearing-house	1991	UNEP - IE's Ozone Action Programme	France, Paris	Government
AGRIS	International Information System for Agriculture Science and Technology	1975	FAO	Italy, Rome Austria, Vienna	Agriculture: science and technology
CARIS	Current Agricultural Research Information System	1975	FAO	Italy, Rome	Agriculture: research
GREENTIE	Greenhouse Gas Technology Information Exchange	1993	IEA/OECD	Netherlands, Sittard	Product and company information

Table 2. Examples of national systems and networks

Abbreviation	Network	Launched	Institution	Location	Area of Application
JICST	Japan On-line Information System		Science and Technology Agency	Japan, Tokyo	Science and technology
ISAT	German Information and Advisory Service on Appropriate Technology	1988	GTZ	Germany, Eschborn	Appropriate technologies
EREN	Energy Efficiency and Renewable Energy Network	1994	NREL	USA, Colorado	Energy (technologies)
EREC	Energy Efficiency and Renewable Energy Clearing-house	1994	NREL	USA, Colorado	Energy (specific applications)

National technology information centres and networks in developing countries

35 Non-Annex I countries also have numerous centres that collect and disseminate information on technologies. For example, the Indian Centre for Promotion of Cleaner Technologies (ICPCT), established in 1996 at the National Environmental Engineering Research Institute of India (NEERI), founded in 1958 as part of the National Information Centre for Cleaner Technologies (NICCT)), has developed a database of 510 case studies on cleaner technologies, and is in the process of developing an information system. Also, the Southern Centre for Energy and the Environment in Harare, Zimbabwe is host to the South African Network on Energy and Environment (SANEE). The CTI data set includes 65 technology information centres in 19 countries.[8] It is, therefore, reasonable to assume that there are probably

[8] The CTI data indicate that most of the centres replying to the questionnaire were NGOs (63%), while 17% were commercial organizations. A majority of these centres provide services within their own country, but approximately 15% of the centres provide services on an international scale. Twenty-five percent of the centres were located in research institutions.

hundreds of centres throughout the world. However, because the CTI did not evaluate current centres, it is necessary to be cautious about the capabilities and effectiveness of such centres.

Summary of CTI data set on national technology information centres in developing countries

36. The CTI data set indicates that most national centres had more than one mission. Consulting services is the most common mission (46%), followed by information networking (35%). The same data set reveals that 52% of the responding centres are engaged in training, almost half of the centres (46%) concentrate on education and economic analysis and 11% are able to provide quality control to the information they collect. The CTI data set also provides information about who are the users of the information provided by centres. It found that most of the users are government organizations (88%). These users predominantly request information about energy (91%), environmental science applications (58%) and waste management (40%)[9] (See FCCC/SBSTA/1997/INF.4 for further detailed information).

37. Also included within the CTI data set is information about how national centres communicate with the users of information. The data set indicates that the fax (86%) and printed media, comprised of reports and documents (85%), are the most commonly used means of communication (86%). Approximately, 60% of all centres use the phone, e-mail and newsletters. Finally, centres use workshops (74%), professional associations (51%) and paid advertisements (20%) to promote their services.

38. A very important factor in the exchange of information on cleaner technologies is the use of language. As reported in the CTI survey, 83% of the centres provide services in English and 32% communicate in more than one language. Twelve centres use two languages and nine centres use more than two languages.

39. Depending on the financial support that technology information centres and networks receive from governments and other sources, they may charge users for their services. Free services are often provided by government institutions, but sometimes also by non-governmental centres and networks, depending upon the financial support they derive from, national and/or international institutions. Yet, more than half of the responding centres (52%) indicate no charges for calling on their information services. Of these, 32% of the centres reported no charges to the users for direct response to questions and 20% reported having minimal charges for direct services and other charges like membership fees and subscriptions.

Networks in developing countries

40. Eighty percent of the responding centres and networks to the CTI survey are using e-mail facilities as a means of communication. Access to the Internet by the same community is also

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[9] Comparable information may be found in the preliminary technology needs survey prepared by R. van Berkel, in co-operation with the secretariat. In that survey, Parties most frequently cited the energy and waste management sectors as ones about which they needed technology information.

improving in many countries, as evidenced by the increasing number of Internet Service Providers (ISP) in the Asian, African and South American regions. These ISPs provide services such as electronic mail, Internet access, on-line publishing, access to various search engines, and electronic conferences. A few examples are APNG (Asia Pacific Networking Group), JARING (Network for Malaysia), SDN (Pacific Sustainable Development Network), MauriNet (Mauritius Network), MANGO (Network for Non-Profit Community in Zimbabwe), and CCCNet (Co-operation Committee for Cambodia Network). Since access to the Internet has been improving, a number of networks are now being developed which focus on technological and environmental issues. Some examples include Pactok (PacificTalk), ScINET-PHIL (Science and Technology Network of the Philippines), and STACnet (Philippine Science & Technology Advisory Council Network). In most cases, these networks are still in the process of identifying the needs of their users and packaging information accordingly.

Current barriers

41. There are three barriers that users face in drawing information from electronic systems, as well as from printed materials. These may restrict current accessibility of technology information. First, most of the information is only available in English. Second, a lack of training in the use of electronic databases may prolong or even prevent some users from accessing appropriate data. This includes the lack, in some instances, of a "hotline" to answer relatively simple questions. Third, some databases have access and other fees that may be a barrier to obtaining technology information.

D. Options for possible centres and networks

42. There are numerous options for enhancing and/or building new international centres and networks, as well as for enhancing existing national centres. These options require consideration of the financial, institutional and operational aspects, some of which are beyond the scope of this initial report.

Enhancing existing and/or building new international centres and networks[10]

43. Options for enhancing and/or building new international centre(s) and networks need to consider the number of centres, the sectors to be covered, the type of services to be provided, the types of information needs and the user groups to whom information will be provided (see Table 3 below). Each of these factors directly affect the cost of options.[11] While not precluding any option, this paper focuses on three different levels to facilitate consideration by the SBSTA. The first level options are of relatively modest cost. The second level would be more costly, and the third the most expensive.

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[10] The term "building new" refers to a new capability at an existing physical facility or institution.

[11] Preliminary information on user needs was provided in the initial survey of technology information needs conducted by the secretariat. The survey will be expanded as described in section II of this document.

Table 3. Factors affecting the cost of possible future international centre(s)

Regions	Asia, Latin America and Africa
Sectors	Energy, agriculture, forestry, waste management, industry, transportation and adaptation
Information services	Identification, collection and compilation, synthesis and quality assurance
Users	National governments, local governments, business large/ small, education/research institutions, consultants/ engineering design firms, financial institutions and the public
Types of information	Strategic information on technology and policies, company lists, product lists, engineer/consultant lists, projects, financial services, policies, feasibility studies and scientific

First level

44. Extending existing information centres and networks could be a quick and relatively inexpensive option.

(a) Corporate and product databases. One possible approach to extending existing capabilities could be GREENTIE. Presently, GREENTIE, an initiative of the IEA and the Organisation for Economic Co-operation and Development (OECD) is a leading provider of information on corporations and product databases. It is accessible on-line and on CD ROM. It includes the participation of 25 member countries of the IEA/OECD[12] and its service is free to all countries. Approximately 9,000 organizations from 31 countries[13] are in the GREENTIE system. These organizations include suppliers of machinery and equipment, Research and Development centres, engineering and consulting companies, service suppliers, and also organizations that provide funding, training, reports or publications. For users in countries not yet actively participating, telephone and fax service is provided and sets of information are distributed in hard copies (FCCC/TP/1997/4).

GREENTIE provides information on technology to all countries, but transmits

[12] Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom of Great Britain and Northern Ireland, and the United States of America.

[13] Australia, Colombia S.A., Côte d'Ivoire, Denmark, Egypt, Eritrea, France, Germany, Hungary, India, Indonesia, Italy, Japan, Kenya, Mexico, the Netherlands, Norway, Philippines, Poland, Republic of Korea, Senegal, Seychelles, Sweden, Taiwan, Thailand, Tunisia, Uganda, the United Kindom of Great Britain and Northern Ireland, Uruguay, the United States of America, and Zambia.

information from sources only within the OECD member countries. Information on corporations and products from developing countries are not available. GREENTIE has been hitherto restricted to do so due, to its legal status and the implementing agreements, which bind it within the IEA and OECD context.

The GREENTIE database could be opened up to non-OECD information sources and users that meet agreed criteria. This might be accomplished at relatively low cost, perhaps in the range of 100-250 k (US$), but would need to be done on a multilateral basis.

(b) Improving linkages between national and international centres - Around 43% of the national centres and networks responding to the CTI survey cited inadequate computer equipment and limited or no Internet access as technical barriers. Improving access to equipment, and supporting users in how to make the best use of it, could foster access to climate-friendly technologies and could overcome barriers. Equipment could also help to link national centres to international centres and systems. Another barrier to accessing information electronically is the lack of training in the use of information technologies. This includes, in some cases, how to install and use hardware and software, how to develop Web pages and collect information from the Internet.

Bilateral and multilateral activities through workshops could be used to train experts in developing countries to access electronic information. Collaboration with industry might further strengthen the process of identifying technology information needs and solutions. A series of workshops might be held at a relatively modest cost, to ensure that there is a focal point to access information and train others in each developing country.

(c) Linking networks - Information about climate-friendly technologies is available at numerous institutions, spread over the whole world, each of which contains a part of the knowledge that together represents the current status of scientific and empirical knowledge as a whole. Many networks have been developed to disseminate such knowledge. However, one way to share this expertise is to improve linkages between institutions.

The Web itself has a "linking" nature. Any information put on the Internet can easily be linked to other sites through hyperlinking. Hyperlinking, moreover, allows providers to focus on their area of expertise while offering services to many users. There are many ways these linkages can be improved. Links between national centres and institutions in Annex I and non-Annex I countries can be established as can links between national centres and institutions within the countries.

The best way to improve these linkages is through the initiative of each institution. Although, in some instances national governments may need to provide an environment to enable this to occur.

Second level

45. A single international centre - A single international centre with limited functions could be established. The scope of such a centre would need careful consideration. One approach would be to focus activities on the needs of a few customers, such as national governments, local governments, small businesses and consultants/engineering-design companies (FCCC/SB/1997/4). Such a centre could also focus, initially, on providing only a few services like identifying sources and collecting and synthesizing information. Also, the types of information could be limited to publishing newsletters, for example, until such time that experience had been gained with the demand for its products. The cost of such a centre would be a function of its scope and location, but could range from 1 to 5 million US$

46. The centre could focus on all or just a few sectors. If such a centre were to cover all sectors, it would need to rely on specialized centres for its information. Careful consideration would also need to be given to its institutional location. In this regard, options could include co-location with another international organization, such as, the Ozone Action Information Clearing-house (OAIC) of the UNEP or a national institution having complementary capabilities.

47. The abovementioned option would need either multilateral support directly from Parties on a voluntary basis or through the Global Environment Facility (GEF) and one of its implementing agencies.

Third level

48. Multiple international centres - Several international centres could be established either to serve regional users, providing limited information on all sectors, or to provide more detailed sectoral information on technologies for all users. As in the case of the single centre option, the services, customers and types of information would need to be considered. Multiple centres would, *a priori*, be able to provide more specialized information on technology information. Regional centres might have the advantage of being able to tailor products to meet the unique needs of each region. Sectoral centres would have the advantage of being able to focus on specialized technologies, such as renewable energy equipment.

49. Regional or sectoral centres could be co-located with other regional or specialized institution, so as to take advantage of existing capabilities. The cost of this option would depend on the number of centres and their functions. Its implementation would also need multinational support on a voluntary basis.

Enhancing existing national centres

50. National centres can be a complement to and an important user of information from an international centre(s). They can serve as an interface with the private sector and other local institutions, synthesize information and translate key information into local languages.

51. The enhancement of existing national centres could be pursued independently or in parallel with activities to enhance and/or build new international centres and networks. While several approaches could be considered. There are two ways to ensure the relevance to the Convention. The first would be to provide support to improve information for national communications. The second would be to provide support to developing countries.

52. As many non-Annex I Parties are preparing national communications, there is a need for the best available information on technologies. Enhanced support to improve the information collection capabilities in national centres could be accomplished, via modest support for enabling activities through the GEF. This support could take the form of the provision of software, equipment and training.

53. A second example might be the co-location of "community technology centres" with local industries in developing countries. These "centres" are typically equipped with personal computers, printers, a modem, a fax machine and a consultant. As a means of serving communities with modern communication facilities, community technology centres, sometimes called "telecottages", have been established by the private sector and governments in Australia, Brazil, Canada, some European countries and the United States of America. Such centres often start with basic functions, and then add functions as local people and organizations provide a demand. Often the following services are offered:

(a) Shared telecommunications, computer, and office facilities;

(b) Training in the use of the technology;

(c) Information technology consulting services;

(d) Local business and support services (data-processing);

(e) Electronic information access; and

(f) Local government information and meeting space.

54. There are three interrelated functions, in particular, that a community technology centre could address. These could include, providing a place where people in the community can become familiar with information and communication technology, increasing skill levels in the local business and community, and advising businesses and organizations on how to access information on technologies. A community technology centre could also provide a local capacity to evaluate and implement information technology. This type of activity has two aspects

in that both local initiative and involvement and some assistance are required. Technical support from governments in developing and developed countries could help to overcome initial barriers.

E. Issues requiring clarification

55. The SBSTA will need to consider whether the options provided in this document have merit and how it wishes to proceed. In this regard, the following issues warrant consideration:

(a) What general approach should be taken as a follow-up to this document?

(b) Are additional options needed and/or is more information needed on a particular option?

(c) If appropriate, what institutional arrangements should be considered regarding implementation of any of these options?

(d) How should the financial aspects associated with centres and networks be approached?

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ROSTER OF EXPERTS: EXPERIENCE OF THE SECRETARIAT IN ITS USE

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I. INTRODUCTION

A. Mandate and scope of the note

1. The Subsidiary Body for Scientific and Technological Advice (SBSTA), at its fifth session, requested the secretariat to produce a report on its experience in using the roster of experts, for its seventh session. This note responds to that request. It describes how the nominees were obtained, the use of the roster and the process of invitation. It also identifies several procedural issues that have affected the use of the roster at this early stage and provides a number of suggestions for improving the process. It should be noted that the roster has only been used for a few tasks. Therefore, the experience of the secretariat is limited. An accompanying document (FCCC/SBSTA/1997/INF.6) provides an overview of nominations to the roster.

B. Background

2. At its second session, the Conference of the Parties (COP), in its decision 7/CP.2,1/ requested the secretariat to expedite the preparation of reports on adaptation technology and the terms of transfer of technology and know-how conducive to mitigating and adapting to climate change, and, in preparing these reports, to draw on nominees with expertise in these fields from Parties. It further noted that such a roster of experts and its use in facilitating the work of the Convention secretariat should be evaluated by the SBSTA and the Subsidiary Body for Implementation (SBI), taking into account the ongoing discussion on Intergovernmental Technical Advisory Panel(s) (ITAPs). The COP also requested the SBI to evaluate and report on the transfer of technologies being undertaken between Annex II Parties and other Parties, and to do so by drawing on a roster of experts as referred to above.

3. At its fourth session, the SBSTA noted that many methodological topics are complex issues that could benefit from the advice of experts. As in the case of technology and technology transfer, the SBSTA requested the secretariat to draw on nominees with expertise in these fields from Parties to provide advice on methodological issues and to consider, *inter alia,* the use of round tables, briefings and other means to facilitate understanding of methodological issues by Parties, particularly developing country Parties (FCCC/SBSTA/1996/20).

4. At its fifth session, the SBSTA recalled the need as expressed in decision 7/CP.2 to evaluate the use of the roster of experts in facilitating the work of the Convention secretariat, taking into account the ongoing discussion on ITAPs. It took note of the plans of the secretariat to make use of the roster for preparing reports on technology and technology

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1/ For decisions adopted by the Conference of the Parties at its second session, see document FCCC/CP/1996/15/Add.1.

transfer by, *inter alia*, the seventh session. It requested the secretariat to also prepare a report on its experience in using the roster, for the seventh session (FCCC/SBSTA/1997/4).

C. Possible action by the SBSTA

5. The SBSTA may wish to:

(a) Take note of this report as well as the information note on nominations to the roster and, where necessary, provide guidance to the secretariat on the use of the roster of experts;

(b) Recall its intention to expand the roster to include experts in the field of methodologies as provided for at its fourth session and, in so doing, urge the secretariat to seek additional nominees with methodological expertise from Parties, reflecting the priority areas in the work programme;

(c) Request Parties to review the information on the current roster and points of contacts, and to submit, as soon as possible, additional nominations to the secretariat, particularly of experts with backgrounds related to the economic and financial aspects of transfer of technology and know-how, such as bilateral aid programmes, multilateral lending, and private sector banking, and to nominate experts with the particular methodological expertise that would be sought by the secretariat; and

(d) Develop a recommendation for a draft decision regarding the roster of experts, to be adopted by COP 3 and, in accordance with the division of labour with the SBI, keep the SBI informed about such recommendation.

II. THE ROSTER

A. Current roster

6. In response to decision 7/CP.2, the secretariat sent on 22 August 1996 a letter to Parties requesting the nomination of experts to be included in a roster on technology transfer. The letter included guidance to the Parties concerning the nomination procedure and the criteria for inclusion. It included a list of over a hundred specific fields of expertise considered by the secretariat to be relevant to the assigned tasks. It also requested Parties to forward to the secretariat a curriculum vitae and an application form for each nominee. Subsequently, at its fifth and sixth sessions, the SBSTA invited Parties to forward additional nominees to the roster.

7. A preliminary list of nominees was made available to the Parties in a conference room paper during the fourth session of the SBSTA. An updated list on nominees and the points of contact for each Party is provided in FCCC/SBSTA/1997/INF.6.

8. The current roster contains 312 nominees[2] from 44 Parties of which 184 are fromAnnex I Parties[3] and 128 from non-Annex I Parties. The five most frequently represented fields of expertise in the present roster include the following:

	Number of experts
- Energy, technology and know-how	47
- Natural resources management	44
- Mitigation, planning and management	38
- Water resources management	27
- Environmental economics	24

B. Use of the roster

9. The secretariat has used the roster to obtain assistance with three reports, that is, on adaptation technologies, terms of transfer of technology and know-how, and technology information centres and networks. In order to do so, the secretariat convened three meetings as reported in documents FCCC/SB/1997/3 and FCCC/SB/1997/4. In the process of holdings these meetings, the secretariat used 15 nominated experts from non-Annex I Parties and six from Annex I Parties. In addition, four experts from international organizations participated. In one case, a meeting was held in conjunction with a meeting of the Intergovernmental Panel on Climate Change (IPCC) in order to encourage co-ordination. The secretariat provided funding for participation by experts from eligible Parties in accordance with normal practice and the availability of resources.

10. The secretariat has sought advice from the experts on the broad direction of its work and on activities underway within national institutions and international organizations. It has also used the experts to review, via electronic means, technical papers on adaptation (TP/1997/3), temperature adjustments (TP/1997/4) and activities of Parties included in Annex II related to technology transfer (FCCC/SBSTA/1997/13). In so doing, it has sought to involve experts at other stages in the preparation of technical reports. In the future, the secretariat may seek to involve experts in other activities such as the preparation of draft material.

11. Because of the emphasis given to the methodological work programme in the budget for the next biennium (FCCC/SBI/1997/16 and FCCC/SBSTA/1997/6), the secretariat will, in the near future, seek nominees from governments with expertise reflecting the priorities for the programme as identified by the SBSTA.

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[1] Nominees who have not provided a curriculum vitae or an application form have not been included. Also, two nominees did not specify their field of expertise. Therefore, only 310 nominees are listed in document FCCC/SBSTA/1997/INF.6.

[2] One Annex I Party nominated over 60 experts.

C. Processes of invitation and conduct of meetings

12. The meetings held by the secretariat were limited in size to encourage discussions, but also because of available resources. The goal was to have meetings with 10-12 participants. In selecting participants for meetings, the secretariat sought to balance scientific and technical expertise on the one hand, and regional experience on the other.

13. The invitation process for the meetings included the following:

(a) An identification of the objectives of the meeting;

(b) A review of the roster to identify experts with the required scientific and regional backgrounds;

(c) An inquiry via an informal letter/e-mail to the expert to determine his/her availability and interest;

(d) The issuance of a formal invitation, after availability and interest are confirmed;

(e) The transmittal of a letter to the nominating government to inform it of the invitation and to request financial support for travel, as necessary; and

(f) The provision of assistance with travel arrangements.

14. The agenda for each meeting was flexible. It was designed to meet the information needs of each report. However, two common elements were the election of a chairperson from among the experts and initial presentations by the experts.[4] The purpose of the first element was to emphasize the independent role of the experts vis-a-vis the secretariat, while the purpose of the second element was to ensure that each expert was given an opportunity to provide information based on his/her experience.

15. After each meeting, all participants received a draft copy of the meeting report for comments. The final meeting reports may be found in documents FCCC/SB/1997/3 and FCCC/SB/1997/4.

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[4] In the case of the meeting on terms of transfer, the group decided that no chairperson was necessary due to the limited number of attendees.

III. DISCUSSION

16. The experience of the secretariat in using the roster has been positive except for the procedural issues listed below. In all cases, the participants demonstrated a high level of competence and a great deal of interest. They provided presentations that were well prepared and contributed thoughtfully to the discussions. The chairpersons also made special contributions by guiding the deliberations of the groups and ensuring that meeting reports were prepared for use by the secretariat.

17. The secretariat encountered three difficulties with the process of using experts.

18. First, it was difficult to ensure a balance among scientific and technical areas of expertise and regional experience in each specific meeting. The secretariat can only afford to issue a limited number of invitations because it is necessary to keep the size of its meetings rather small. If some invited experts are not able to attend a meeting at the last minute, it may be impossible to invite substitutes and the balance of a meeting can turn out to be different than anticipated. In the case of the meeting on terms of transfer, the secretariat has sought the participation, over the course of two and a half months, of 22 experts from 13 countries and four international organizations. Of these, 16 invitations were declined because of conflicting schedules or other factors, including acts of war, so that the secretariat had to reconsider the scientific and regional balance of the meeting. In the future, the secretariat will try to ensure adequate participation by issuing invitations earlier and, within the budgetary possibilities, by inviting several more experts than would be strictly necessary.

19. Second, the roster contains only a limited number of experts in some fields, particularly those related to the economic and financial aspects of transfer of technology. As the secretariat is requested to provide information on such topics in the future, it may be necessary to update the roster with additional nominees.[5]

20. Third, it was difficult to obtain sufficient participation of experts from Annex II Parties. One reason may be that the secretariat does not cover the travel expenses of such participants and another reason may be that experts often do not fully recognize the importance of their potential contribution. The secretariat will modify the invitation process identified in paragraph 13 so as to inform government contact points whenever an inquiry of availability is sent to the expert. This may enable countries, if necessary, to provide early support to the process, including considering the financing of travel.

21. Finally, the roster has many more nominees in some fields than the secretariat may be able to use in the next biennium. Parties should be aware that nominating experts may raise

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[5] In a few cases, the review of the roster, as indicated under step (b) in paragraph 13, caused the secretariat to informally request additional nominees from national contact points.

expectations among them concerning their participation. Some experts may in the future be less willing to be on a roster, unless they are called upon to actively participate.

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ACTIVITIES IMPLEMENTED JOINTLY UNDER THE PILOT PHASE

Synthesis report on activities implemented jointly

Note by the secretariat

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I. INTRODUCTION

1. The Convention stipulates that efforts to address climate change may be carried out cooperatively by interested Parties. By its decision 5/CP.1, the Conference of the Parties (COP), at its first session, decided to establish a pilot phase for activities implemented jointly (AIJ) among Annex I Parties and, on a voluntary basis, with non-Annex I Parties that so request.

2. Through the same decision the COP requested the Subsidiary Body for Scientific and Technological Advice (SBSTA) and the Subsidiary Body for Implementation (SBI) to prepare, with the assistance of the secretariat, a synthesis report for consideration by the COP (decision 5/CP.1, para. 2(c)). On this basis, the COP shall, at its annual session, review the progress of the pilot phase with a view to taking appropriate decisions on its continuation (decision 5/CP.1, para. 3(a)). "In so doing, the Conference of the Parties shall take into consideration the need for a comprehensive review of the pilot phase in order to take a conclusive decision on the pilot phase and the progression beyond that, no later than the end of the present decade" (decision 5/CP.1, para. 3(b)).

3. The present document contains a synthesis prepared by the secretariat in response to the request by the COP and is intended to support the SBSTA and the SBI in the preparation of their synthesis report and recommendations to the COP. This synthesis is based on reports by Parties on national programmes for AIJ under the pilot phase as well as on specific AIJ.

4. In accordance with the criteria for reporting under the AIJ pilot phase, this synthesis reflects only those AIJ for which reports have been received, either jointly or separately, from all designated national authorities (DNA) of Parties participating in an activity as indicated in annex IV of document FCCC/SBSTA/1996/8. For an activity to be considered as an activity implemented jointly under the pilot phase, it needs, at least, to be reported as being accepted, approved or endorsed by all the DNAs involved. Table 1* contains the list of activities implemented jointly. It is noted that the list differentiates, with the help of the column entitled "Report submission", between reports that have been submitted in time for consideration in this synthesis (39 activities) and those which were submitted after the deadline (23 activities, identified by an "x" in the "1997 late" sub-column only). Three AIJ of the 39 considered in this synthesis were only reported as accepted, approved or endorsed. Of the 39 AIJ, 25 were reported in accordance with the Uniform Reporting Format (URF) adopted by the SBSTA at its fifth session in March 1997, and 11 AIJ, submitted prior to that adoption, in accordance with the initial reporting framework. The existence of two different formats, and the fact that Parties had only a few weeks between March and the submission deadline of 30 June 1997 for preparing reports in accordance with the URF, account for a certain lack of homogeneity in the scope and detail of reporting by Parties.

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* All tables referred to in this document are contained in document FCCC/SBSTA/1997/12/Add.1.

II. MAIN CONCLUSIONS

5. The participation of Parties in AIJ programmes and activities, which fully satisfy the criteria established by the COP, is slowly expanding. Twelve Parties submitted reports on national programmes for AIJ under the pilot phase in 1997, twice as many as in 1996. A similar trend is discernible for AIJ. With stricter reporting standards in effect, duly endorsed reports for consideration in the synthesis report were submitted on 39 activities, involving 11 countries. Yet, even though this is a limited base for drawing conclusions, a gradual expansion of activities which meet all AIJ and reporting criteria is discernible.

6. Since many programmes and activities are at an early stage, most Parties are still in the process of gaining experience. Their reports are, therefore, necessarily limited in coverage. A detailed consideration of the programmes and activities on which reports were received allows, however, some preliminary conclusions. They are as follows:

(a) The bulk of current AIJ is between Annex I Parties, with host countries being economies in transition (EIT). Only two non-Annex I Parties have AIJ programmes involving ten activities. Nine are in Latin America and the Caribbean and one is in Africa. The regional concentration is even more pronounced considering that, of a total of 39 activities, 18 involve the same two Annex I Parties (Estonia and Sweden) and that one country in the Latin American and Caribbean region (Costa Rica) hosts eight of the ten activities, including those in non-Annex I Parties;

(b) The total amount of greenhouse gases (GHG) estimated to be reduced or sequestered by 39 activities considered is distributed over the various types of activities. Six forestry preservation and afforestation activities account for 57 per cent of the abatement impact and 34 per cent are attributable to one fugitive gas activity. Twenty-nine activities related to energy account for 9 per cent of the GHG abatement effect. Most AIJ under the pilot phase are relatively small in terms of investment and their individual contribution to GHG abatement is limited. A more significant effect would, however, be achievable through the replication of such projects;

(c) At this early stage of the pilot phase, most data on the costs and the amount of GHG abated are only estimates and are, therefore, not a suitable basis for analysis;

(d) The financing sources of AIJ are often described in detail. In some cases, funding for reported AIJ does not seem to be secured. In cases of multiple sources of funding, it appears important that reports establish financial additionality with regard to the financial obligations of Annex II Parties within the financial mechanism, as well as current official development assistance flows;

(e) Participating Parties use the pilot phase to gradually acquire procedural and institutional experience while achieving mitigation effects. Investor as well as host Parties have

gained experience, for example in the application of criteria in support of decision 5/CP.1, and have developed additional criteria to reflect national priorities. Host Parties which set up an AIJ unit appear to be successful in attracting financial resources and in ensuring their utilization in priority areas of national development. An increasing number of Parties are designating national focal points for AIJ and indicating interest in technical workshops, seminars and conferences on AIJ;

(f) Parties, however, appear to be approaching the pilot phase cautiously. Information on the AIJ mechanism is insufficiently disseminated in developing as well as developed countries, and incentives appear inadequate. This may explain the hesitation of the private sector to invest in a significant manner.

7. The reports which have been considered for this synthesis report show variations in structure and coverage. This variability in reporting quality may be due to the relatively short time available to Parties for preparing the reports in accordance with the URF and/or the possible lack of guidance as to the level of detail expected. The development of guidelines providing definitions of terms, descriptor lists and specification of reporting requirements could prove useful. The following specific problems were encountered:

(a) Environmental, social/cultural and economic benefits are generally not described in a detailed manner. Virtually no negative impacts are reported. Some Parties, being aware of this limitation, indicated that future reports would be more specific, and that resources would be allocated to provide improved information; and

(b) The basis for calculating costs and GHG mitigation effects is often insufficiently explained. Further, definitions of the costs of the AIJ component and other reporting items, such as the lifetime of the activity and technical data, are not consistent. While the essential methodological elements for calculating GHG reductions are stated, the information supplied by Parties does not always allow replication.

8. The information received reveals the need to further clarify the approaches to the methodological issues adopted by the SBSTA at its fifth session. These include: (a) determination of environmental benefits; (b) modalities for measurement, reporting and assessment; (c) endogenous capacity-building; (d) transfer of environmentally-sound technologies and know-how; (e) considerations of costs; (f) modalities for mutually beneficial incentive structures for involved Parties, acknowledging that there are no credits under the pilot phase; and (h) institutional arrangements.

III. SYNTHESIS OF NATIONAL AIJ PROGRAMME REPORTS

9. Parties are invited to submit information using the URF for national programmes on AIJ under the pilot phase, including contact information for the DNA for AIJ, descriptions of the programme structure and features as well as the process for obtaining approval including

procedure and criteria, and a summary of activities. In order to compare main features of various national programmes, summarized information on key aspects is presented in tables 1 and 2. Detailed information contained in those programme reports, which were received in electronic format, is available on the UNFCCC world wide web site** and through the UNFCCC CD-ROM.

10. Of the nine Parties which submitted AIJ programme reports for this document, six did so for the first time (Costa Rica, Japan, Mexico, Poland, Sweden and Switzerland) while three Parties provided updates of the programme reports submitted in 1996 (Germany, Norway and the United States of America). Those Parties for which no updates were received are marked with an asterisk (Australia, Canada and the Netherlands).

11. All twelve Parties report to have developed criteria which emphasize certain aspects of the pilot phase. Eleven Parties state that emission reductions, and, in that context, baseline calculations, must be verifiable. Four Parties require that proposals contain verification and/or monitoring plans. The periodic reassessment of the emission reductions and their estimates, as well as the sustainability of emission reductions, are criteria for six Parties, respectively. Eight Parties require the explicit analysis of environmental impacts. Social impacts are specifically taken into consideration by five Parties. Three Parties mention the need for training components to be included in AIJ. One host Party indicates that while AIJ comprising exclusively technical assistance, education or training activities are valuable forms of foreign aid, they may not qualify as joint implementation activities. Concerning their special focus during the pilot phase, two Parties point to emission reduction activities and one Party to small, quickly implementable activities. One host Party focuses on new financial mechanisms to direct AIJ.

IV. SYNTHESIS OF REPORTS ON AIJ

12. The synthesis covers 39 AIJ for which reports were submitted prior to the deadline of 30 June 1997. Regarding three activities, only the approval, acceptance or endorsement by all the designated national authorities involved has been reported. Eleven reports were submitted prior to the adoption of the URF.

13. The reports are summarized in accordance with the structure of the URF. The headings hereafter reflect the respective URF heading followed by the URF section number in brackets.

** Open the UNFCCC site at http://www.unfccc.de, proceed following the link to CC:INFO Products and to CC:INFO/AIJ.

A. Description of projects (A.)

1. Title of the project (A.1)

14. Table 1 contains the list of activities implemented jointly. Each activity listed has been reported as accepted, approved or endorsed by the relevant DNAs involved. This list shows the AIJ considered in this synthesis as well as those activities for which information, in accordance with the reporting criteria, has been submitted after the deadline.

2. Participants/actors (A.2)

15. The number of reported participants per activity range from two to six. The participants involved in the activities included academic institutions, private sector enterprises, non-governmental organizations, governmental agencies, the World Bank (WB) and the Global Environment Facility (GEF). The functions within the AIJ described for the host country participants included: acting as a government contact for activity implementation, ownership of the facility at the activity site, local investor and developer, agencies that are responsible for reporting on and implementing AIJ, emissions testing, and activity evaluation. The functions of the investor country participants focussed primarily on financial and technical roles. The specific functions listed for the investor country participants included: management and administration of the AIJ, financing of the monitoring costs, scientific monitoring, project management/transfer of know-how, and technical support. However, no detailed standard information regarding the role and activities of the participants is available.

3. Activity (A.3)

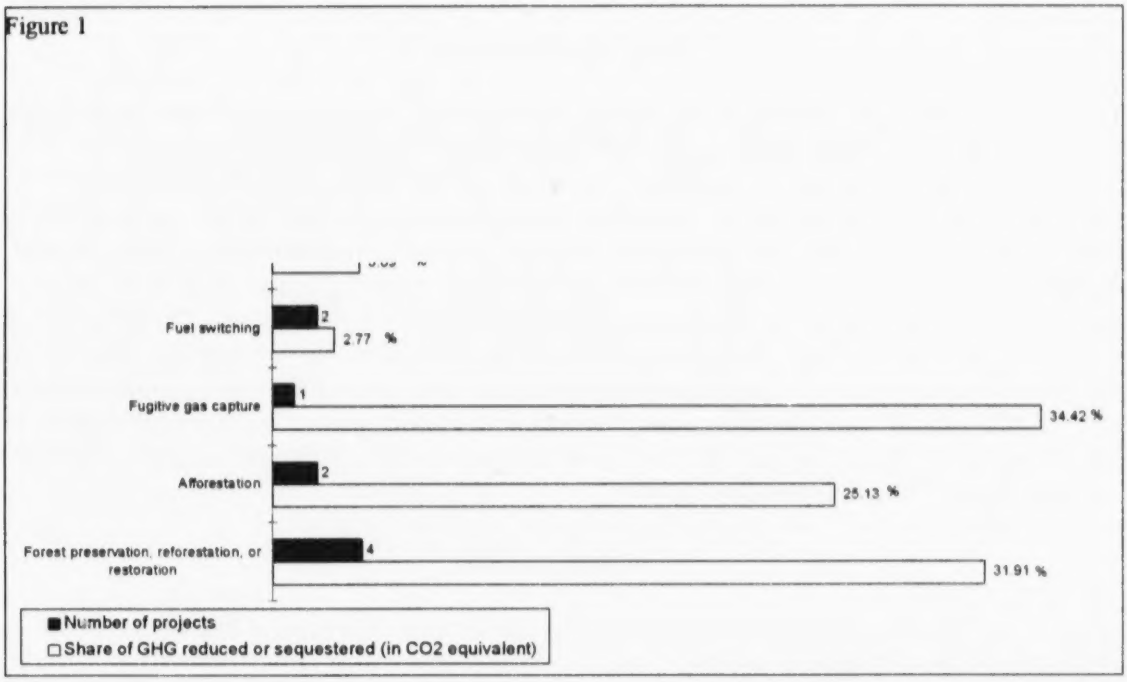
16. The following details are to be reported in this section: (a) a general description of the activity; (b) a classification of activities by type; (c) an identification of the location; (d) an expected starting and ending date as well as the lifetime of the activity, if different; (e) the present stage of the activity; and (f) technical data.

17. In accordance with the sectors identified by the IPCC, activities can be classified as follows: 10 in energy efficiency, 17 in renewable energy, 2 in fuel switching (1 in the transport sector, and 1 in the energy sector), 4 in forest preservation restoration, or reforestation, 2 activities on emissions/sequestration from afforestation and 1 in fugitive gas capture were reported. To date none of the following types have been reported on: industrial processes, solvents, agriculture, waste disposal or bunker fuels.

18. Figure 1 below shows the total number of activities of a specific type related with the share of GHGs reduced or sequestered, expressed in CO_2 equivalent. It is noted that 3 activities did not provide data used for this comparison (one in each of the following types: energy efficiency, fugitive gas and forest preservation restoration, or reforestation); 6 forestry preservation and afforestation activities account for 57 per cent of the GHG abatement impact,

while 34 per cent is attributable to one fugitive gas activity; 17 renewable energy activities account for 2 per cent of the GHG abatement effect; 2 fuel switching activities account for 3 per cent and 10 energy efficiency activities account for 4 per cent of the total GHG abatement effect. It may be noted that two Parties have cooperated in a significant number of activities showing a pattern of replication: six activities in energy efficiency (mainly improvement of municipal/district heating systems) and 12 activities in renewable energy (conversion to bio-fuel boilers).

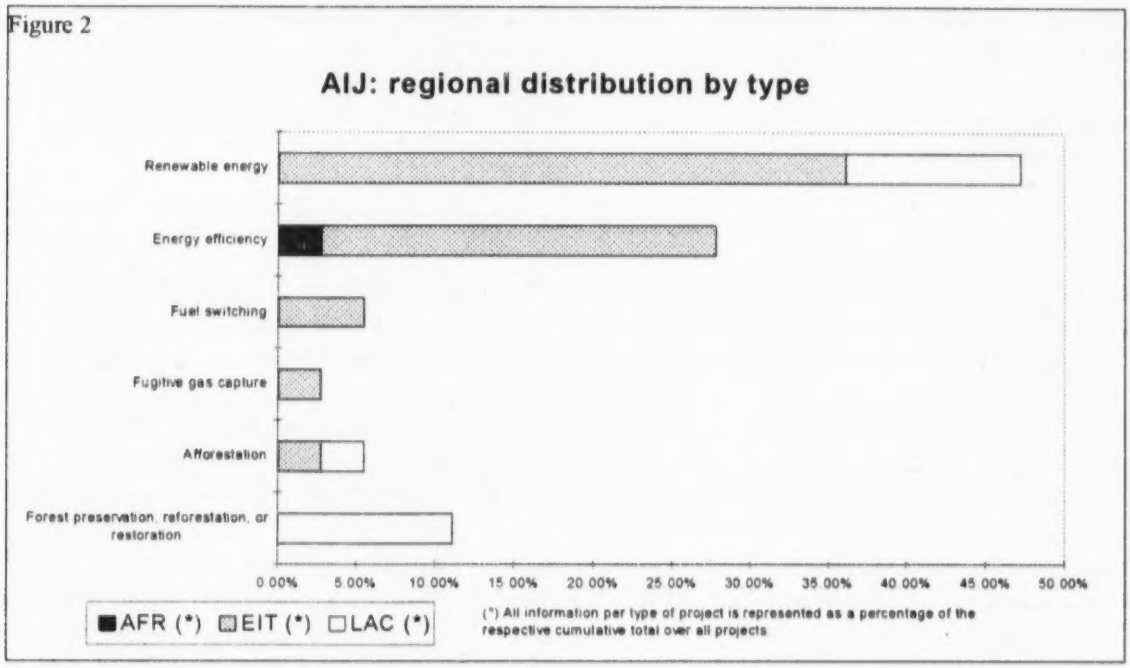
Figure 1



19. The geographical distribution of the activities is still not very balanced. Activities are being carried out, or have been proposed, in several non-Annex II countries and regions, including Burkina Faso, Costa Rica, the Czech Republic, Hungary, Latvia, Mexico, Poland, Romania and the Russian Federation. Of the 39 activities reported, 28 were in economies in transition (EIT), one was in Africa (AFR), and ten in Latin America and the Caribbean (LAC). Another way of looking at the geographical distribution is by type of activity. It appears that activities in the areas of energy efficiency, renewable energy, fuel switching and fugitive gases are mainly implemented in EIT countries while forestry-related activities are mainly implemented in LAC countries (see Figure 2 below).

20. Concerning the stage reached by the activities, reports showed a variety of divergent interpretations of descriptors provided for in the URF thus demonstrating that a more

Figure 2



differentiated and better defined list may be needed. Out of 25 activities, 2 were reported mutually agreed, 4 were in progress, and 19 were completed. For the remaining, either no information was available, or reports had been submitted prior to the adoption of the URF.

21. Concerning starting date, ending date and lifetime of the activities, it is to be noted that clearer guidance is required with regard to the definition of the respective information items. The length of time between starting and ending date differs in most cases from the lifetime of the activity. The lifetime of the activities ranged from below 5 to 25 years, with 5 activities in the below 5 year range, 20 activities in the 6-10 year range, 2 activities in the 11-15 year range, 3 activities in the 16-20 year range, and 6 activities with a lifetime of more than 20 years.

22. The information on the technical data showed a lack of guidance with regard to the expected kind of information and its level of detail. Information provided as technical data included: (a) carbon equivalent calculations regarding the forest to be preserved; (b) policy issues in the conversion from coal to gas; (c) calculations of improved efficiency goals for the activity; (d) data on the energy production; and (e) emissions of energy plants and vehicles such as buses.

4. Cost (to the extent possible)(A.4)

23. All activity reports provided information regarding the determination of cost for the activity. The URF requests information under an item worded, "AIJ component in US$". Some activity reports provided information on this item on an annual basis. It seems that this item requires a clearer definition or should be reformulated for clarity. Only a few of the reports described the method of their calculations and the data support for the calculations was not consistently provided.

5. Mutually agreed assessment procedures (A.5)

24. Some activity reports described the roles/activities of host country organizations in mutually agreed assessment procedures. Most activities reported local and/or national organizations as responsible for the majority of the scheduled data collection for the activities.

25. With regard to measurement, responsibilities were assigned to national and municipal institutions of the host country and, in some cases, to private organizations of the host country. Assessments were commonly carried out by national public and private organizations of the host country, yet, in one case, by a private company of the investor country. The responsibility to report on AIJ to the DNA was assigned, in some cases, to a private company of the investor country, and in other cases, to private or public organizations in the host country, sometimes with initial support from the investor country organizations. In one case the investor Party provided scientific support to those involved in measurement, reporting and assessment in the host countries.

B. Governmental acceptance, approval or endorsement (B)

26. At the moment of finalization of this document, a total of 62 AIJ activities have been reported to the secretariat. That is, all activities have received endorsement by the designated national authorities for activities implemented jointly. For 59 activities, reports have been submitted jointly, that is, one Party submitted the report with the concurrence of the other designated national authority involved in the activity. No separate reports have been submitted for the same AIJ by involved DNAs. Three activities have been reported as approved, accepted or endorsed, but no report has been submitted, and are considered in the present synthesis, where appropriate.

C. Compatibility with, and supportiveness of, national economic development and socio-economic and environment priorities and strategies (C)

27. In this section, Parties are invited to report, to the extent possible, whether AIJ are compatible with, and supportive of, national economic development and socio-economic and environment priorities and strategies. The answers are of various types, and again vary in detail.

Some Parties state that the activity is in accordance with, or in support of, a specific national policy. Other Parties describe the national characteristics in a specific sector and how the activities support sector-specific policies at the local or national level. Another group describes the national policy and relevant selection criteria for activities that are in support of such a policy. Some examples of policies or strategies mentioned are sustainable development goals in the areas of forestry and land-use, energy policies, transport policies, and trade balance issues in traditional and non-traditional goods.

D. Benefits derived from the activities implemented jointly project (D)

28. Qualitative and quantitative information was provided regarding environmental, social/cultural and economic benefits. Nearly all Parties stated benefits in each category, often with quantitative data for environmental benefits for GHG reduction and naming other reductions including SO_2, N_xO and particles. Some Parties included other environmental benefits, such as fostering biodiversity, improving water quality and reducing erosion of hydrological resources. The majority of the reports indicated social/cultural benefits, including active involvement of local communities, increased public awareness, maintenance of natural heritage and historical sites, as well as cleaner air. The economic benefits were stated in terms of savings on energy, improved working environment and economic opportunities through the introduction of new technologies. A few Parties included the development of local production capacity through the involvement and/or establishment of local enterprises.

E. Calculation of the contribution of activities implemented jointly projects that bring about real, measurable and long-term environmental benefits related to the mitigation of climate change that would not have occurred in the absence of such activities (E)

1. Estimated emissions without the activity (project baseline) (E.1)

29. The description of the project baseline (baseline) was, in most cases, brief. Some Parties reported baselines that assumed no change in the level of activity, for example, assuming a static, energy/heat consumption over the lifetime of the activity. Other Parties reported a continuation in present trends, for example, assuming declining carbon stocks or unsustainable energy consumption patterns. Assumptions, in some cases, imply that there would be no technological advance or energy efficiency improvements in the absence of the AIJ activity over its lifetime or duration. In one case, the activity was analysed with four possible alternative scenarios for a baseline, depending on the market penetration of a more efficient product. In that case, the future GHG emissions reductions were computed with an "average scenario". The alternatives were not described in detail in the submission received.

2. Estimated emissions with the activity (E.2)

30. The description of the scenario and the methodologies applied to calculate the emissions avoided or sequestered were brief. In some cases, secondary effects of implementing an activity were indicated. For example, if in a cogeneration scheme renewables were to replace oil or coal, gas would still be needed for generating the heat component.

31. Due to the early stage of the pilot phase, only a few of the reports provided data for the actual emissions reduced. Only two of the reports provided the projected emission reductions table with yearly calculations for the lifetime of the activity, while the rest of the reports offered yearly data only for the first two years and the last year. The calculations of projected and actual emissions reductions focused primarily on CO_2. One activity included calculations of emissions reductions for CH_4 and N_2O, and another activity calculated the emissions reductions of CO, THC (total hydrocarbons), NO_x, and particle matter (PM).

32. A smaller number of the activity reports provided sufficiently detailed data to allow for the calculations to be easily reproduced. However, most of the calculations for emissions reductions were not described in adequate detail to allow for their replication.

33. Some of the aspects related to the identification of the baseline and the activity scenario such as system boundary and leakage were, in most cases, not sufficiently addressed.

F. Financing of activities implemented jointly (...) (F)

34. The involvement of private investment is still relatively low. In several cases, public funds, especially those established in addition to present official development assistance and contributions to the financial mechanism of the Convention, are made available to activities. One Party uses its fund mainly as a revolving fund. It finances the technical assistance and capacity building activities aspects in the form of grants, and the remaining elements, through loans to the host country entities at a preferential rate. The dues by the host are reinserted in the fund when paid.

35. Some activities involved funding by the GEF. The reasoning for acceptance by host and investor Party are that the AIJ component of the project is an add-on to a project which was to be implemented anyhow. The aim of the additional finance is to enhance the impact of a specific project. For example, the additional funds are used to install more gas boilers (in replacement of existing coal-fired boilers) than envisaged by the GEF project alone. Another example is the use of those funds to enable the host Party to subsidize the purchase of a larger number of high-efficiency light-bulbs than envisaged in the GEF project, thereby enhancing the chances of success of a demand-side management project.

G. Contribution to capacity building, transfer of environmentally sound technologies and know-how (...) (G)

36. Generally all reports mentioned that the activity, in one form or the other, contributed to capacity building, transfer of environmentally sound technologies and know-how. The list, hereafter, provides examples of such contributions:

(a) The sale of a non-traditional good, in this specific case, certified tons of carbon reduced or sequestered, by the host country, is combined with raising awareness and understanding, at the community and individual level, of how to integrate so-called externalities in the economic reasoning, and thereby create a supply market for a non-traditional good;

(b) Favourable loan conditions for the host country provide for favourable conditions for the transfer of energy technologies. In combination with, among other measures, training and stimulation of network building between participants in different activity sites, these kinds of activities aim at stimulating and enhancing the replication conditions for the respective technology;

(c) Mainly locally available technology is applied in the activity, thereby strengthening the in-country transfer of know-how to that technology. The same activity includes training by local experts of national energy officers at the community level;

(d) Transfer of a new technology, including training, to local producers enabling them to produce and maintain the new product;

(e) Transfer mobile emission and fuel consumption monitoring hardware and know-how to a national energy provider with the aim to optimize the national power production; and

(f) Enhance national and local capacities in the area of sustainable forest management, carbonization and cooking stoves technologies as well as PV systems.

H. Additional comments, if any, including any practical experience gained or technical difficulties, effects, impacts or other obstacles encountered (H)

37. Most of the additional comments are activity-specific, ranging from technical difficulties, such as the choice of electrical voltage, or co-ordination of suppliers and water supply quality, to the threat to activity implementation for lack of additional funding. In addition, training and capacity-building to maintain, service and manage technologies were considered important.

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ACTIVITIES IMPLEMENTED JOINTLY UNDER THE PILOT PHASE

Synthesis report on activities implemented jointly

Corrigendum

Note by the secretariat

Page 4, paragraph 6 (a) should read

(a) The bulk of current AIJ is between Annex I Parties, with host countries being economies in transition (EIT). Only three non-Annex I Parties have AIJ of which nine activities are in Latin America and the Caribbean and one activity is in Africa. The regional concentration is even more pronounced considering that, of a total of 39 activities, 18 involve the same two Annex I Parties (Latvia and Sweden) and that one country in the Latin American and Caribbean region (Costa Rica) hosts eight of the ten activities in non-Annex I Parties;

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Pages 8 and 9, figures 1 and 2 respectively should read

Figure 1

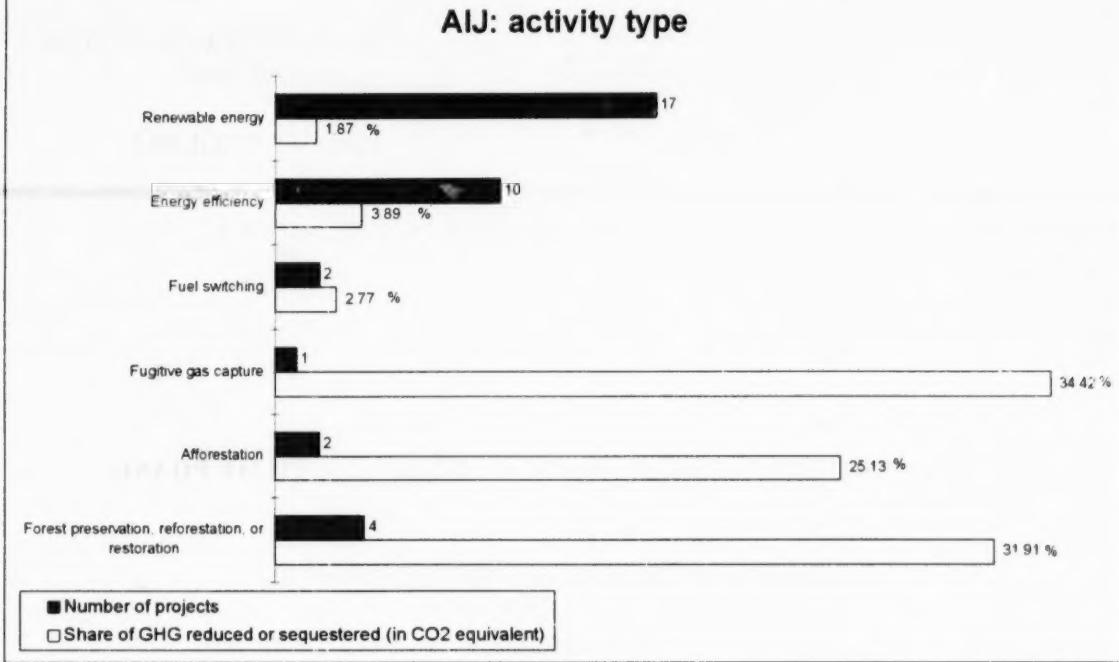
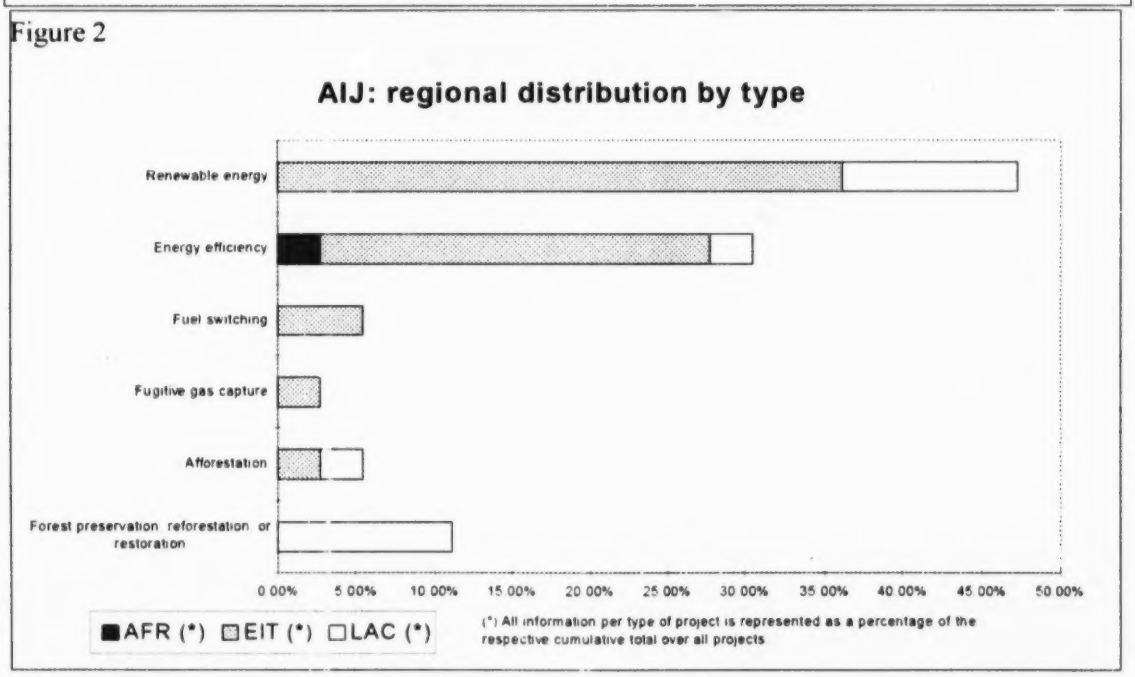


Figure 2



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Note by the secretariat

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TABLES

Table 1: Table of activities implemented jointly under the pilot phase
(list updated continuously and made
available in the CC:INFO/AIJ section of the UNFCCC WWW site)

Activity Type	Activity Title	Parties	Lifetime (years)	CO_2* (metric tons)	Report submission**		
					1996	1997	1997 late
Afforestation	Project CARFIX: Sustainable Forest Management	Costa Rica, USA	25	21,776,749	x	---	x
Afforestation	RUSAFOR: Saratov Afforestation Project	Russian Federation, USA	40	292,728	x	---	---
Agriculture	Project Salicornia: Halophyte Cultivation in Sonora	Mexico, USA	10	437	---	---	x
Energy efficiency	Adavere District Heating	Estonia, Sweden	10	2,000	---	---	x
Energy efficiency	Aluksne District Heating	Latvia, Sweden	10	30,850	---	x	---
Energy efficiency	Balvi District Heating	Latvia, Sweden	10	40,000	---	x	---
Energy efficiency	Burkina Faso Sustainable Energy Management	Burkina Faso, Norway	6	1,450,000	---	x	---
Energy efficiency	Emission Reduction at Power Plants in Romania	Netherlands, Romania	5	1,092,000	---	x	---
Energy efficiency	Energy-efficiency Improvement by Hungarian Municipalities and Utilities	Hungary, Netherlands	20	240,000	x	x	---
Energy efficiency	High Efficiency Lighting (ILLUMEX)	Norway, Mexico	4.5	531,000	x	---	x
Energy efficiency	Horticulture Project in Tyumen	Russian Federation, Netherlands	---	---	---	x(E)	---
Energy efficiency	Järvakandi District Heating	Estonia, Sweden	10	3,900	---	---	x
Energy efficiency	Jelgava District Heating	Latvia, Sweden	10	4,120	---	x	---
Energy efficiency	Jelgava Energy Efficiency	Latvia, Sweden	10	800	---	x	---

Activity Type	Activity Title	Parties	Lifetime (years)	CO_2* (metric tons)	Report submission**		
					1996	1997	1997 late
Energy efficiency	Modelling and Optimization of Grid Operation of the Gas Transportation System "Ushgorod Corridor" of Wolgotransgas (Gazprom)	Germany, Russian Federation	---	---	---	---	X
Energy efficiency	Mustamäe - Mustamäe tee, Ehitajate tee, Sütiste tee Energy Efficiency	Estonia, Sweden	10	3,700	---	---	X
Energy efficiency	Mustamäe - Vilde tee Energy Efficiency	Estonia, Sweden	10	3,000	---	---	X
Energy efficiency	Orissare District Heating	Estonia, Sweden	10	8,500	---	---	X
Energy efficiency	Saldus District Heating	Latvia, Sweden	10	3,350	---	X	---
Energy efficiency	Saldus Energy Efficiency	Latvia, Sweden	10	2,100	---	X	---
Energy efficiency	Türi District Heating	Estonia, Sweden	10	9,100	---	---	X
Energy efficiency	Valga District Heating	Estonia, Sweden	10	7,000	---	---	X
Energy efficiency	Vändra District Heating	Estonia, Sweden	10	2,200	---	---	X
Energy efficiency	Võru District Heating	Estonia, Sweden	10	40,000	---	---	X
Forest preservation	ECOLAND: Piedras Blancas National Park	Costa Rica, USA	16	1,342,733	X	---	X
Forest preservation	Forest Rehabilitation in Krkonose and Sumava National Parks	Czech Republic, Netherlands	15	9,834,120	X(E)	---	X
Forest preservation	Reduced Impact Logging for Carbon Sequestration in East Kalimantan	Indonesia, USA	40	206,800	---	---	X
Forest preservation	Rio Bravo Carbon Sequestration Pilot Project	Belize, USA	40	4,801,478	---	---	X
Forest reforestation	Klinki Forestry Project	Costa Rica, USA	40	7,216,000	X	---	X
Forest reforestation	Reforestation and Forest Conservation	Costa Rica, Norway	25	846,405	---	X	---
Forest reforestation	Scolel Té: Carbon Sequestration and Sustainable Forest Management in Chiapas	Mexico, USA	30	55,000-1,210,000	---	---	X

Activity Type	Activity Title	Parties	Lifetime (years)	CO_2* (metric tons)	Report submission**		
					1996	1997	1997 late
Forest restoration	Project BIODIVERSIFIX	Costa Rica, USA	51	18,480,000	X	---	X
Fuel switching	Coal to Gas Conversion	Poland, Norway	17	2,408,866	X	X	---
Fuel switching	RABA/IKARUS Compressed Natural Gas Engine Bus Project	Hungary, Netherlands	20	7,400	X	X	---
Fugitive gas capture	RUSAGAS: Fugitive Gas Capture Project	Russian Federation, USA	25	30,000,666	X	---	X
Fugitive gas capture	Sanitary Landfilling with Energy Recovery in the Moscow Region	Russian Federation, Netherlands	---	---	---	X(E)	---
Renewable energy	Aeroenergia S.A. Wind Facility	Costa Rica, USA	20	36,194	X		X
Renewable energy	Aluksne Boiler Conversion	Latvia, Sweden	10	254,000	---	X	---
Renewable energy	Balvi Boiler Conversion	Latvia, Sweden	10	132,000	---	X	---
Renewable energy	Brocenia Boiler Conversion	Latvia, Sweden	10	86,000	---	X	---
Renewable energy	Daugavgriva Boiler Conversion	Latvia, Sweden	10	130,000	---	X	---
Renewable energy	Doña Julia Hydroelectric Project	Costa Rica, USA	15	210,566	X	---	X
Renewable energy	El Hoyo-Monte Galan Geothermal Project	Nicaragua, USA	40	19,765,628	---	---	X
Renewable energy	Haabneme Boiler Conversion	Estonia, Sweden	10	124,000	---	---	X
Renewable energy	Janmuiza Boiler Conversion	Latvia, Sweden	10	38,000	---	X	---
Renewable energy	Jekabpils Boiler Conversion	Latvia, Sweden	10	24,000	---	X	---
Renewable energy	Jurmala Boiler Conversion	Latvia, Sweden	10	94,000	---	X	---
Renewable energy	Narva Joesuu Boiler Conversion	Estonia, Sweden	10	8,100	---	---	X
Renewable energy	Paldiski Boiler Conversion	Estonia, Sweden	10	81,000	---	---	X
Renewable energy	Plantas Eólicas S.A. Wind Facility	Costa Rica, USA	21	222,538	X	---	X

Activity Type	Activity Title	Parties	Lifetime (years)	CO_2* (metric tons)	Report submission**		
					1996	1997	1997 late
Renewable energy	Rauna Boiler Conversion	Latvia, Sweden	10	24,000	---	X	---
Renewable energy	Stampe Boiler Conversion	Latvia, Sweden	10	39,000	---	X	---
Renewable energy	Solar-Based Rural Electrification in Honduras	Honduras, USA	24	17,192	---	---	X
Renewable energy	Tartu-Aardla Boiler Conversion	Estonia, Sweden	10	98,000	---	---	X
Renewable energy	Tierras Morenas Windfarm Project	Costa Rica, USA	13	118,611	X	---	X
Renewable energy	Ugale Boiler Conversion	Latvia, Sweden	10	44,000	---	X	---
Renewable energy	Valga Boiler Conversion	Estonia, Sweden	10	64,000	---	---	X
Renewable energy	Valka Boiler Conversion	Latvia, Sweden	10	30,000	---	X	---
Renewable energy	Viesite Boiler Conversion	Latvia, Sweden	10	24,000	---	X	---
Renewable energy	Viljandi Boiler Conversion	Estonia, Sweden	10	98,000	---	---	X
Renewable energy	Voru Boiler Conversion	Estonia, Sweden	10	114,000	---	---	X
Renewable energy	Wind Power Plant	Germany, Latvia	10	12,579	---	X	---

* This column shows the estimated reduced emissions measured in metric tonnes of CO_2 equivalents.

** In this column "X" indicates that a report has been submitted and "X(E)" indicates that only the endorsement by Parties involved has been received in the respective year.

Table 2: National Programmes, criteria in 5/CP.1

Criterion Country	AIJ should be compatible with, and supportive, of national environment and development priorities and strategies	AIJ should contribute to cost-effectiveness in achieving global benefits	AIJ require prior acceptance, endorsement, or approval by the Governments of the Parties participating in these activities
Australia (*)	host country government must accept project as being consistent with national priorities	yes	yes
Canada (*)		yes	yes
Costa Rica	yes	yes	yes
Germany	yes	yes	yes
Japan	be adequately assessed and reviewed	yes	yes
Mexico	yes	yes	yes
Netherlands (*)	must be compatible with, and supportive, of national environment and development priorities	yes, for forestry projects	yes
Norway	yes	yes	yes
Poland	yes	yes	yes
Sweden	yes	yes (profit generation, competitive procurement procedures ...)	yes
Switzerland	yes	yes	yes
United States	yes	yes	yes

(*) No new information has been submitted for this table. The last information was provided in 1996.

Table 2: National Programmes, criteria in 5/CP.1 (cont.)

Project criterion Country	AIJ should bring about real, measurable, and long-term environmental benefits related to the mitigation of climate change that would not have occurred in the absence of such activities	Financing of AIJ shall be additional to financial obligations of Annex II Parties within the framework of the financial mechanism and regular ODA flows	No credits shall accrue to any Party as a result of greenhouse gases reduced or sequestered during the pilot phase
Australia (*)	project should involve specific measures to reduce net GHGs initiated as a result of AIJ	must be additional to ODA and other sources under UNFCCC	yes
Canada (*)	activities must result in measurable reductions of net GHG emissions	activities should be financed outside existing ODA	no emission reduction credits can be claimed by the country of an investing entity against its domestic stabilization commitment to the year 2000
Costa Rica	yes	yes	yes
Germany	yes	yes	yes
Japan	Yes, taking into consideration all leakage effects	additional to financial obligations under Art. 4.3 as well as current ODA flows	yes
Mexico	yes	yes	yes
Netherlands (*)	minimum annual sequestration requirements for forests	additional to GEF as well as current ODA	will not use AIJ for its present commitments under the FCCC
Norway	yes	additional to GEF as well as ODA	there are no credits to be accrued during the pilot phase and private sector is not granted exemptions or refunds of the Norwegian CO_2 tax or other national policies for participating in AIJ pilot phase activities
Poland	yes	yes	yes
Sweden	yes	yes	yes
Switzerland	yes	yes	yes
United States	yes	must be additional to: GEF, multilateral development bank, ODA, or in excess of U.S. federal funding level in 1993	yes

(*) No new information has been submitted for this table. The last information was provided in 1996

Table 3: National Programmes, additional criteria

Project criterion — Country	Project was initiated specifically for AIJ purposes	Emission reductions are required to be verifiable, including baseline calculations	Emissions monitoring programme required
Australia (*)	project should involve specific measures initiated as a result of AIJ	yes	a high degree of transparency should exist
Canada (*)		measurable reductions required	
Costa Rica	considers AIJ proposals	proposals should contain already detailed analysis (defensible reference or baseline case). provisions for independent verification be included in project	yes, in order to establish a high degree of certainty
Germany		actual and measurable benefits required	
Japan		yes	yes
Mexico	yes	yes	yes
Netherlands (*)	projects should be economically sound and would not have been set up without additional AIJ funding	yes	yes
Norway	the scope of the project must be enlarged due to AIJ investments	yes	detailed programme for each reported project
Poland	projects involving technological development and upgrading of equipment, or involving financial resources to procure such technologies and equipment, or projects directly reducing the generation of GHGs in the production of goods and services	it must be possible to estimate *ex ante* the expected reductions in GHG emissions and monitor *ex post* the actual reductions in GHG emissions	yes
Sweden			
Switzerland		can be easily monitored and verified (e.g., focus on projects that result in significant CO_2 reductions; no sink enhancement projects)	
United States	technology or practice must not have been introduced in the region without AIJ, if not, only incremental reductions are counted	verification plan and independent third-party replicability required	monitoring plan required

(*) No new information has been submitted for this table. The last information was provided in 1996

Table 3: National Programmes, additional criteria (cont.)

Project criterion —— Country	Emission reductions are required to be sustainable	Periodic reassessment of emission reduction estimates	Analysis of other environmental impacts required	Analysis of social impacts required
Australia (*)		explicit requirement	need to account for impacts	need to account for impacts
Canada (*)				
Costa Rica	durability/quality required		yes	
Germany	lasting benefits required			
Japan		yes, by project implementation entities	to be adequately assessed and reviewed	to be adequately assessed and reviewed
Mexico	sufficient guarantees required	annual progress reports used as feedback tool	yes	yes
Netherlands (*)	yes	addressed through monitoring programme	projects should lead to clear beneficial local environmental impacts	project must contribute to the socio-economic position of the local population
Norway	yes	addressed through monitoring programme	analysis provided for each reported project	
Poland	yes	yes	activities should not lead to negatif developments of other local/regional environmental quality indicators as a result of achieving reductions in GHG emissions	
Sweden				
Switzerland				
United States	yes	explicit requirement	impacts should be identified	impacts are considered

(*) No new information has been submitted for this table. The last information was provided in 1996

Table 3: National Programmes, additional criteria (cont.)

Project criterion —— Country	Project must be consistent with sustainable development principles	Project should include a training component in host country	Institutional arrangements in host country	special focus in the pilot phase
Australia (*)	yes			
Canada (*)				
Costa Rica	yes		to the extent local entities could adequately implement and administer projects	development of financial mechanisms to direct the AIJ projects, and marketing
Germany				main emphasis on emission reductions, sinks are not excluded.
Japan				
Mexico	yes	need to represent an advance in the country's technical capacity		
Netherlands (*)	projects require sustainable forestry and energy policies	yes		
Norway			viewed to be an asset but not a criterion *per se*	
Poland	be sensitive to, and compatible with, macroeconomic policies at national and *'voivodeship'* levels	projects which include only technical assistance, education, or training are valuable forms of foreign assistance but they will not be considered as JI projects		encourage the economic use of natural resource and re-use or recycling of waste materials, and be compatible with, and promote, to the greatest extent possible, the utilization of modern production processes
Sweden				small projects allowing for quick implementation
Switzerland				energy production and end-use (e.g., fuel-switching to low- or no-carbon fuels, renewable energies, enhanced energy-efficiency)
United States				

(*) No new information has been submitted for this table. The last information was provided in 1996.